

Appendix 1
Bibliography
Studies/Reviews

APPENDIX 1

BIBLIOGRAPHY

Clinical Wear Studies
Experimental Wear Studies
Tissue Response
Metal Sensitivity Studies
Reviews

Clinical Wear Studies

1. Adami G et al: Cobalt blood levels after total hip replacement: A new followup study in Trieste (Italy). *Annali di Chimica* 93:1-10, 2003
2. Albrecht-Olsen P., Owen-Falkenberg T., Burgaard P., Andersen P.B.: Nine-year follow-up of the cementless ring hip. *Acta Orthop Scand* 60, 1989.
3. Almby, B, Hierton, T. Total Hip Replacement: A Ten-Year Follow-up of an Early Series. *Acta Orthop. Scand.*, 53:397-406, 1982.
4. Andrew T.A., Berridge D., Thomas A., Duke R.N.: Long-term review of ring total hip arthroplasty. *Clin Orthop* (201): 111-122, Dec 1985.
5. August A.C., Aldam C.H., and Pynsent, P.B.: The McKee-Farrar hip arthroplasty. A long-term study. *J Bone Joint Surg (Br)*: 68 (4): 520-527, 1986.
6. Baldursson, H. Hip Replacement with the McKee-Farrar Prosthesis in Rheumatoid Arthritis. *Acta Orthop. Scand.*, 51:639-648, 1980.
7. Beaule P et al: Risk factors affecting outcome of Metal-on Metal surface arthroplasty of the hip. *Clin Orthop Vol 1(418):87-93*, 2004
8. Bentley G, Duthi RB: A comparative review of the McKee-Farrar and Charnley total hip prostheses. *Clin Orthop* 95, 1973, p. 127–142.
9. Boehler N: Experiences with metal on metal components in THR. *Orthopaedica Belgica*. 63/SUPPL. 1: 96-97, 1997.
10. Boehler N: Metal/metal articulating interfaces. *Orthopedics* 18(9):879-80, 1995.
11. Breck LW: Metal to metal total hip joint replacement using the Urist socket. An end result study. *Clin Orthop* 95:38-42, 1973
12. Brodner W et al: Serumcobalt- und Serumchromspiegel bei zwei chronisch niereninsuffizienten Patientinnen mit Hufttotalendoprothese und Metall-Metall-Gleitpaarung. *Z Orthop* 138:425-9, 2000
13. Brodner W et al: Serum cobalt levels after metal-on-metal total hip arthroplasty. *JBJS* 85A(11):2168-73, 2003
14. Brodner W et al: Cup inclination and serum concentration of cobalt and chromium after metal on metal total hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:66-70, 2004
15. Brodner W et al: Does the placenta inhibit the passage of chromium and cobalt after metal-on-metal total hip arthroplasty? *J Arthroplasty* 19(8) Suppl 3:102-106, 2004

-
16. Brown SR et al: Long-term survival of McKee-Farrar total hip prostheses. *Clin Orthop* 402:157-163, 2002
 17. Bryant, M.J., Mullan, R.A. and Nixon, J.R.: Survivorship analysis of the Ring hip arthroplasty. *J Arthroplasty* (6 Suppl): S5-10, 1991.
 18. Campbell P et al: Autopsy analysis thirty years after metal-on-metal total hip replacement. *JBJS* 85-A(11):2218-21, 2003
 19. Chapchal G, Müller W: Total hip replacement with the McKee prosthesis. A study of 121 follow-up cases using neutral cement. *Clin Orthop* 72, 1970, p. 115-122.
 20. Clarke MT et al: Dislocation after total hip replacement in relation to metal-on-metal bearing surfaces. *JBJS* 85-B(5):650-4, 2003
 21. Clarke MT et al: Levels of metal ions after small- and large-diameter metal-on-metal hip arthroplasty. *JBJS* 85-B(6):913-17, 2003
 22. Cuckler JM: Large versus small femoral heads in Metal-on-Metal total hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:41-44, 2004
 23. Dandy DJ, Theodorou BC: The management of local complications of total hip replacement by the McKee-Farrar technique. *J Bone Joint Surg* 57B, 1975, p.30-35.
 24. Daniel J et al: Metal-on-metal resurfacing of the hip in patients under the age of 55 years with osteoarthritis. *JBJS* 86-B(2):177-184, 2004
 25. Debeyre J, Goutallier D: Urist hip socket and Moore prosthesis without cement for hip replacement. *Clin Orthop* 72, 1970, p. 169-173.
 26. Delaunay CP: Metal-on-metal bearings in cementless primary total hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:35-40, 2004
 27. Djerf, K., Wahlstrom, O.: Total hip replacement comparison between the McKee-Farrar and Charney prostheses in a 5-year follow-up study. *Arch Orthop Trauma Surg* 105 (3): 158-162, 1986.
 28. Dorr-LD; Hilton-KR; Wan-Z; Markovich-GD; Bloebaum-R: Modern metal-on-metal articulation for total hip replacements. CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research. -/333 (108-117), 1996.
 29. Dorr LD, Wan Z, Longjohn DB, DuBois B, Murken R: Total Hip Arthroplasty with Use of the Metasul Metal-on-Metal Articulation. *J Bone Joint Surg* 82A, 2000, p. 789-98.
 30. Dorr LD et al: The argument for the use of Metasul as an articulation surface in total hip arthroplasty. *Clin Orthop* 429:80-86, 2004
 31. Duff-Barclay I, Scales JT, Wilson JN: The development of the Stanmore total hip replacement. *Proc Royal Soc Med* 59, 1966, p. 948-951.

32. Dunstan E et al: Metal ion levels after metal-on-metal proximal femoral replacements: a 30 year follow-up. JBJS 87-B(5):628-31, 2005
33. Evarts CM, Gramer LJ, Bergfeld JB: The Ring total hip prosthesis. Comparison of results at one and three years. J Bone Joint Surg 54A, 1972, p. 1677-1682.
34. Freeman PA: McKee-Farrar total replacement of the hip joint rheumatoid arthritis and allied conditions. Clin Orthop 70, 1970, p. 106-114.
35. Freeman, PA, Lee, P, Bryson, TW. Total Hip Joint Replacement in Osteoarthritis and Polyarthritis: A Statistical Study of the Results. *Clinical Orthopedics and Related Research*, 95:224-230, Sept. 1973.
36. Hallap NJ et al: Lymphocyte responses in patients with total hip arthroplasty. J Orthop Res 23(2):384-91, 2005
37. Harding I et al: Serum levels of cobalt and chromium in a complex modular total hip arthroplasty system. J Arthroplasty 17(7):893-95, 2002
38. Harper GD, Bull T, Cobb AG, Bentley G: Failure of the Ring polyethylene uncemented acetabular cup. J Bone Joint Surg 77B, 1995.
39. Heisel C et al: The relationship between activity and ions in patients with metal-on-metal bearing hip prostheses. JBJS 87-A(4):781-87, 2005
40. Higuchi F, Inoue A, Semlitsch M. Metal-on-metal CoCrMo McKee-Farrar total hip arthroplasty: characteristics from a long-term follow-up study. Arch Orthop Trauma Surg. 1997;116(3):121-4.
41. Hilton K, Dorr LD, Wan Z, McPherson EJ: Contemporary total hip replacement with metal on metal articulation. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 99-105, 1996.
42. Jacobsson SA, Djurf K, Wahlstrom O: 20-year results of McKee-Farrar versus Charnley prosthesis. *Clinical Orthopaedics and Related Research* 329 (Supplemental):60-68, 1996.
43. Jantsch S, Schwägerl W, Zenz P, Semlitsch M, Fertschak W: Long-term results after implantation of the McKee-Farrar total hip prostheses. Arch Orthop Trauma Surg 110, 1991, p. 230-237.
44. Klapperich C, Graham J, Pruitt L, Ries MD. Failure of a metal-on-metal total hip arthroplasty from progressive osteolysis. J Arthroplasty. 1999 Oct;14(7):877-81.
45. Kothari M, Bartel DL, Booker JF. Surface geometry of retrieved McKee-Farrar total hip replacements. Clin Orthop. 1996 Aug; (329 Suppl):S141-7.
46. Kreusch-Brinker, R. Clinical Experience with the McKee-Farrar-Endoprosthesis. *Technical Principles, Design and Safety of Joint Implants*. pp. 68-71, edited by GH Buchhorn and HG Willert, Hogrefe & Huber Publishers.

-
47. Ladon D et al: Changes in metal levels and chromosome aberrations in the peripheral blood of patients after metal-on-metal hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:78-83, 2004
48. Langenskiöld A, Paavilainen T: Total replacement of 116 hips by the McKee-Farrar prosthesis. A preliminary report. *Clin Orthop* 95, 1973, p. 143-150.
49. Langensköld A, Salenius P: Total replacement of the hip by the McKee-Farrar prosthesis. A preliminary report of 81 cases. *Clin Orthop* 70, 1970, p. 105.
50. Leinbach, IS, Barlow, FA. 700 Total Hip Replacements: Experience with 6 Types. *Clinical Orthopedics and Related Research*, 95:174-192, Sept. 1973.
51. Lhota C et al: Four year study of cobalt and chromium blood levels in patients managed with two different metal-on-metal hip replacements. *J Orth Res* 21:189-95, 2003
52. Lindholm RV, Puranen J: Ring total hip replacement in osteoarthritis. *Acta Orthop Scand* 47, 1976, p. 311-316.
53. Lindholm T.S., Viljakka T., Vankka E., Popov L., Lindholm T.C.: Development of heterotopic ossification around the hip. A long-term follow-up of patients who underwent surgery with two different types of endoprostheses. *Arch Orthop Trauma Surg* 105 (5): 263-267, 1986.
54. Lombardi AV et al: Short term results of the M²a-Taper metal-on-metal articulation. *J Arthroplasty* 16(8) Suppl 1:122-28, 2001
55. Long WT et al: An American experience with metal-on-metal total hip arthroplasties. *J Arthroplasty* 19(8) Suppl 3:29-34, 2004
56. MacDonald SJ et al: Metal-on-metal versus polyethylene in hip arthroplasty: a randomized clinical trial. *Clin Orthop* 406:282-96, 2003
57. McCalden RW, Howie DW, Ward L, Subramanian C, Nawana N, Pearcy MJ: Observations on the long-term behaviour of retrieved McKee-Farrar total hip replacement implants. *Transactions of the Orthopaedic Research Society* 20: 242, 1995.
58. McKee GK, Chen SC: The statistics of the McKee-Farrar method of total hip replacement. *Clin Orthop* 95, 1973, p. 26-33.
59. McKee GK, Watson-Farrar J: Replacement of arthritic hips by the McKee-Farrar prosthesis. *J Bone Joint Surg* 48B, 1966, p. 245-259.
60. McKee GK: Development of total prosthetic replacement to the hip. *Clin Orthop* 72, 1970, p. 85-103 1969.

-
61. McKellop H, Campbell P, Lu B, Park SH, Doorn P, Dorr L: Clinical wear performance of modern metal-on-metal hip arthroplasties. Submitted to *Alternative Bearing Surfaces in Total Joint Replacement*, ASTM STP 1346, Jacobs JJ, Craig TL, eds, American Society for Testing and Materials, 1998.
 62. McKellop H, Campbell P, Park SH, Grigoris P, Fowble V, Doorn P, Amstutz H: Wear of retrieved metal-metal implants after two decades of clinical use. *Transactions of the Combined Orthopaedic Research Societies*: 228, 1995.
 63. McKellop H, Park SH, Chiesa R, Doorn P, Lu B, Normand P, Grigoris P, Amstutz H: In vivo wear of three types of metal on metal hip prostheses during two decades of use. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 128-140, 1996.
 64. McMinn D, Treacy R, Lin K, Pynsent P: Metal on metal surface replacement of the hip: experience of the McMinn prosthesis. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 89-98, 1996.
 65. Migaud H: Cementless metal-on-metal hip arthroplasty in patients less than 50 years of age. *J Arthroplasty* 19(8) Suppl 3:23-28, 2004
 66. Milosev I et al: Serum levels of cobalt and chromium in patients with Sikomet metal-metal total hip replacements. *J Orthop Res* 23(3):526-35, 2005
 67. Morris, JB, Nicholson, OR. Total Prosthetic Replacement of the Hip Joint in Auckland. *Clinical Orthopedics and Related Research*, 72:33-35, Sept./Oct. 1970.
 68. Nicholson, OR. Total Hip Replacement: An Evaluation of the Results and Technics, 1967-1972. *Clinical Orthopedics and Related Research*, 95:217-223, Sept. 1973.
 69. Patterson FP, Brown CS: The McKee-Farrar total hip replacement. Preliminary results and complications of 368 operations performed in five general hospitals. *J Bone Joint Surg* 54A, 1972, p. 257-275.
 70. Postel, M, Arama, T. The Low-friction Band Prosthesis. *Total Hip Replacement*. pp. 9-11, edited by M Postel, M Kerboul, J Evrard, JP Courpied, Springer-Verlag Publishing.
 71. Postel M, Fayeton C: The McKee-Merle d'Aubigné Prosthesis. In Postel M, Kerboul M, Evrard J, Courpied JP (eds). *Total Hip Replacement*. Berlin, 1987, Springer 7-9.
 72. Randle R, Gordiev K: Metal-on-metal articulation in total hip arthroplasty: Preliminary results in 57 cases. AUST-NEW-ZEALAND-J-SURG. Australian-and-New-Zealand-Journal-of-Surgery. 67/9 (634-636), 1997.
 73. Ray, A.: 15 years survival of the Mac-Kee Farrar metal hip prosthesis. Apropos of 58 cases and 4 explanted cups. *Rev Chir Orthop Reparatrice Appar Mot* 82 (1): 85-89, 1996.

-
74. Rieker, C.B., Köttig P., Schön R., Windler M., and Wyss U.P., "Clinical Wear Performance of Metal-on-Metal Hip Arthroplasties," Alternative Bearing Surfaces in Total Joint Replacement, ASTM, STP 1346, J.J. Jacobs and T.L. Craig, Eds., American Society for Testing and Materials, 1998
75. Ring PA: Complete replacement arthroplasty of the hip by the Ring prosthesis. *J Bone Joint Surg* 50B, 1968, p. 720–731.
76. Ring PA: Five to fourteen year interim results of uncemented total hip arthroplasty. *Clin Orthop* 137, 1978, p. 87–95.
77. Ring PA: Press-Fit Prostheses: Clinical Experience. In Reynolds D, Freeman M (eds). Osteoarthritis in the Young Adult Hip-Options for Surgical Management. Edinburgh, Churchill Livingstone, 1989, 210–232.
78. Ring PA: Total replacement of the hip joint. A review of a thousand operations. *J Bone Joint Surg* 56B, 1974, p. 44–58.
79. Ruszkowski I, Kovacic S: Experiences with total hip arthroplasty ad modum Ring. *Acta Orthop Scand* 49, 1978, p. 192–194.
80. Salenius P, Laurent LE: Experience with the McKee-Farrar hip replacement. A report of 143 operations. *Acta Orthop Scand* 44, 1973, p. 451–459.
81. Savarino L et al: Ion release in patients with metal-on-metal hip bearings in total joint replacement: a comparison with metal-on-polyethylene bearings. *J Biomed Mater Res* 63:467-474, 2002
82. Savarino L et al: Ion release in stable hip arthroplasties using metal-on-metal articulating surfaces: a comparison between short-and medium-term results. *J Biomed Mater Res* 66-A:450-6, 2003
83. Schmalzried TP, Fowble VA, Ure KJ, Amstutz HC. Metal on metal surface replacement of the hip. Technique, fixation, and early results. *Clin Orthop*. 1996 Aug;(329 Suppl):S106-14.
84. Schmalzried T.P., Peters P.C., Maurer B.T., Bragdon C.R., Harris, W.H.: Long-duration metal-on-metal total hip arthroplasties with low wear of the articulating surfaces. *J Arthroplasty* 11 (3): 322-331, Apr 1996.
85. Schmalzried TP, Szuszczewicz ES, Akizuki KH, Petersen-TD, Amstutz HC: Factors correlating with long term survival of McKee-Farrar total hip prostheses. CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research. - /329 SUPPL. (S48-S59), 1996.
86. Schmidt M, Weber H, Schon R: Cobalt chromium molybdenum metal combination for modular hip prostheses. CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research.-/329 (S35-S49), 1996.
87. Semlitsch M, Streicher RM, Weber H: Long-Term Results With Metal/Metal Pairing in Artificial Hip Joints. In Buchhorn GH, Willert HG (eds). Technical

-
- Principles, Design and Safety of Joint Implants. Seattle, Hogrefe & Huber Publishers, 1994, 62–67.
88. Semlitsch M, Streicher RM, Weber H: Wear behaviour of cast CoCrMo cups and balls in long-term implanted total hip prostheses. *Orthopaede* 18: 377-381, 1989.
 89. Semlitsch M; Willert HG: Clinical wear behavior of ultra-high molecular weight polyethylene cups paired with metal and ceramic ball heads in comparison to metal-on-metal pairings of hip joint replacements. *Proc Inst Mech Eng {H}* 211 (1):73-88, 1997.
 90. Shorbe, HB. Total Hip Replacement without Cement: McBride Acetabular Component and Moore Femoral Prosthesis. *Clinical Orthopedics and Related Research*, 72:186-200, Sept./Oct. 1970.
 91. Sieber HP, Rieker CB, Kottig P.L: Analysis of 118 second-generation metal-on-metal retrieved hip implants. *J Bone Joint Surg Br.* 81(1): Jan 1999, p 46-50.
 92. Simesen K: Total hip replacement ad modum Ring. *Acta Orthop Scand* 51, 1980, p. 929–935, 198
 93. Sivash KM: The development of a total metal prosthesis for the hip joint from a partial joint replacement. *Reconstr Surg Traumat* 11, 1969, p. 53-62.
 94. Smith, RD. Total Hip Replacement. *Clinical Orthopedics and Related Research*, 72:177-185, Sept./Oct. 1970.
 95. Smith, RD. Total Hip Replacement: Review and Analysis of Cases-1961-1972. *Clinical Orthopedics and Related Research*, 95:43-47, Sept. 1973.
 96. Streicher RM, Semlitsch M, Schon R, Weber H, Rieker C. Metal-on-metal articulation for artificial hip joints: laboratory study and clinical results. *Proc Inst Mech Eng [H]*; 210(3):223-32. 1996.
 97. Szuszczewicz ES, Schmalzried TP, Petersen TD. Progressive bilateral pelvic osteolysis in a patient with McKee-Farrar metal-metal total hip prostheses. *J Arthroplasty* 12(7): 819-24. Oct 1997.
 98. Tager, G., Euler, E., Plitz, W.: Changes in shape of the McKee-Farrar hip endoprosthesis. *Orthopade* 26 (2): 142-151, Feb 1997.
 99. Tillberg B: Total hip arthroplasty using the McKee & Watson-Farrar prosthesis. A prospective follow-up study of 327 arthroplasties. *Acta Orthop Scand* 53, 1982, p. 104–107.
 100. Wagner M, Wagner H: Preliminary results of uncemented metal on metal stemmed and resurfacing hip replacement arthroplasty. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 78-88, 1996.
 101. Weber BG, Semlitsch MF, Streicher RM: Total hip joint replacement using a CoCrMo metal-metal sliding pairing. *J Jpn Orthop Assoc* 67, 1993.

-
- 102. Weber BG: Experience with the Metasul total hip bearing system. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 69-77, 1996.
 - 103. Wilson JN, Scales JT: The Stanmore metal on metal total hip prosthesis using a three pin type cup. A follow-up of 100 arthroplasties over nine years. *Clin Orthop* 95, 1973, p. 239-250
 - 104. Wilson PD, Amstutz HC, Czerniecki A, Salvati EA, Mendes DG: Total hip replacement with fixation by acrylic cement. A preliminary study of 100 consecutive McKee-Farrar prosthetic replacements. *J Bone Joint Surg* 54A, 1972, p. 207-236.
 - 105. Zahiri CA, Schmalzried TP, Ebramzadeh E, Szuszczewicz ES, Salib D, Kim C, Amstutz HC. Lessons learned from loosening of the McKee-Farrar metal-on-metal total hip replacement. *J Arthroplasty* 14(3):326-32. 1999.
 - 106. Zaoussis, A.L. and Patikas, A.F.: Experience with total hip arthroplasty in Greece, the first 20 years. A particular reference to long-term results with the McKee-Farrar technique. *Clin Orthop* 246: 39-47, Sept 1989.

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- 107. Anissian HL, Stark A, Gustafson A, Good V, Clarke IC. Metal-on-metal bearing in hip prosthesis generates 100-fold less wear debris than metal-on-polyethylene. *Acta Orthop Scand* 70(6):578-82. 1999.
- 108. Bergmann G, Graichen F, Rohlmann A: Hip joint loading during walking and running, measured in two patients. *Journal of Biomechanics* 26, No. 8: 969-990, 1993.
- 109. Brand RA, Pedersen DR, Davy DT, Kotzar GM, Heiple KG, Goldberg VM: Comparison of hip force calculations and measurements in the same patient. *Journal of Arthroplasty* 9, No. 1: 45-51, 1994.
- 110. Brown M and Gregson J: Effect of mechanical surface pretreatment on metal ion releases. *Biomaterials* 21(4):385-92, 2000
- 111. Butterfield M et al: Wear of metal and ceramic-ceramic hip prostheses with swing phase microseparation. 48th Annual Meeting Orth Res Soc. Paper 0128, 2002
- 112. Chan FW, Bobyn JD, JB Medley, JJ Krygier, "Simulator wear of metal-metal hip implants under adverse load conditions", Transactions of the Orthopaedic Research Society, Anaheim, California, February, 1999

Chan FW, Bobyn JD, JB Medley, JJ Krygier, GF Podgorsak, M Tanzer, "Optimization of metal-metal hip implant design for minimal wear", Proceedings of the ASTM Symposium on Alternative Bearing Surfaces in Total Joint Replacement, San Diego, California, p. 11, November, 1997.

- 113. Chan FW, Bobyn JD, JB Medley, JJ Krygier, GF Podgorsak, M Tanzer, "Identification of wear control parameters for metal-metal hip implants",

Proceedings from the 1st Annual Symposium International de Biomatériaux Avancés, Montreal, Quebec, p. 19, October, 1997.

114. Chan FW, Bobyn JD, JB Medley, JJ Krygier, GF Podgorsak, M Tanzer, "Design parameters that control the wear of metal-metal hip implants", Transactions of the 31st Annual Meeting of the Canadian Orthopaedic Research Society, Hamilton, Ontario, p. 47, May-June, 1997.
115. Chan FW, Bobyn JD, JB Medley, JJ Krygier, GF Podgorsak, M Tanzer, "Design factors that control wear of metal-metal total hip implants", Transactions of the 23rd Annual Meeting of the Society for Biomaterials, New Orleans, Louisiana, p. 77, April-May, 1997.
116. Chan FW, Bobyn JD, JB Medley, JJ Krygier, S Yue, M Tanzer, "Wear performance of metal-metal hip implants", Archives of the American Academy of Orthopaedic Surgeons, Vol. 1, No. 1, pp. 57-60, Summer 1997.
117. Chan FW, Bobyn JD, Medley JB, Krygier JJ, Tanzer M. The Otto Aufranc Award. Wear and lubrication of metal-on-hip implants. Clin Orthop. (369):10-24. 1999.
118. Chan FW, Bobyn JD, Medley JB, Krygier JJ, Yue S, Tanzer M: Engineering issues and wear performance of metal on metal hip implants. Clinical Orthopaedics and Related Research 333: 96-107, 1996.
119. Chan FW, Bobyn JD, Medley JB, Krygier JJ, Yue S, Tanzer M: Engineering issues and wear performance of metal-metal hip implants. Scientific exhibit at the 1997 Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, California, March 1997.
120. Chan FW, Medley JB, JD Bobyn, JJ Krygier, "Numerical analysis of time-varying fluid film thickness in metal-metal hip implants in simulator tests", Alternative Bearing Surfaces in Total Joint Replacement, ASTM STP 1346, JJ Jacobs and TL Craig, Eds, American Society for Testing and Materials, pp. 111-128, 1998.
121. Chan FW, Medley JB, JD Bobyn, JJ Krygier, GF Podgorsak, M Tanzer, "Investigation of parameters controlling wear of metal-metal bearings in total hip arthroplasty", Transactions of the 43rd Annual Meeting of the Orthopaedic Research Society, San Francisco, California, p. 763, February, 1997.
122. Chan FW, Medley JB, JD Bobyn, JJ Krygier, M Tanzer, "Wear performance of cobalt alloy metal-metal hip implants", Transactions of the 51st Annual Meeting of the Canadian Orthopaedic Association, Quebec City, Quebec, p. 89, May, 1996.
123. Chan FW, Medley JB, JD Bobyn, JJ Krygier, S Yue, M Tanzer, "Simulator wear of metal-metal hip implants under severe conditions", Transactions of the 18th Annual Conference of the Canadian Biomaterials Society, Kingston, Ontario, p. 8, July, 1998.
124. Chan FW, Medley JB, JJ Krygier, JD Bobyn, GF Podgorsak, "Influence of fluid film lubrication on the wear of metal-metal hip implants in hip simulator tests", Proceedings of the ASTM Symposium on Alternative Bearing Surfaces in Total Joint Replacement, San Diego, California, p. 6, November, 1997.
125. Chan FW, Medley JB, JJ Krygier, JD Bobyn, M Tanzer, "Investigation of the use of metal-metal bearing surfaces in total hip arthroplasty", Transactions of the 16th

- Annual Conference of the Canadian Biomaterials Society, Ottawa, Ontario, p. 57-58, May, 1995.
126. Chan FW, Medley JB, JJ Krygier, JD Bobyn, M Tanzer, "Wear of metal-metal hip implants in a simulator apparatus", Transactions of the 2nd Combined Orthopaedic Research Societies, San Diego, California, p. 181, November, 1995.
 127. Chan FW, Medley JB, Krygier JJ, Bobyn JD, Podgorsak GF, Tanzer M: Wear performance of cobalt-chromium metal-metal bearing surfaces for total hip arthroplasty. Transactions of the Orthopaedic Research Society 21: 464, 1996.
 128. Chan FW, Wear and Lubrication of Metal-Metal Bearings for Total Hip Arthroplasty, PhD Dissertation, McGill University, Montreal, Quebec, Canada, 1999.
 129. Crowninshield RD, Johnston RC, Andrews JG, Brand RA: A biomechanical investigation of the human hip. Journal of Biomechanics 11: 75-85, 1978.
 130. Davy DT, Kotzar GM, Brown RH, Heiple KG, Goldberg VM, Heiple KG, Jr, Berilla J, Burstein AH: Telemetric force measurements across the hip after total arthroplasty. Journal of Bone and Joint Surgery 70-A, No. 1: 45-50, 1988.
 131. Dowson D, McNie CM, Goldsmith AAJ: Direct experimental evidence of lubrication in a metal-on-metal total hip replacement tested in a joint simulator. Proceedings of the Institution of Mechanical Engineers, Journal of Engineering in Medicine 214: 75-86, 2000.
 132. Dowson D, Walker PS, Longfield MD, Wright V: A joint simulating machine for load-bearing joints. Medical and Biological Engineering 8(1): 37-43, 1970.
 133. Dowson D et al: A hip joint simulator study of the performance of metal-on-metal joints. Part I: The role of materials. J Arthroplasty 19(8) Suppl 3:118-123, 2004
 134. Dowson D et al: A hip joint simulator study of the performance of metal-on-metal joints. Par II: Design. J Arthroplasty 19(8):124-130, 2004
 135. Dumbleton JH, Miller DA, Miller EH: A simulator for load bearing joints. Wear 20(2): 165-174, 1972.
 136. English TA, Kilvington M: In vivo records of hip loads using a femoral implant with telemetric output (a preliminary report). Journal of Biomedical Engineering 1, No. 2: 111-115, 1979.
 137. Farrar R, Schmidt MB: The effect of diametral clearance on wear between head and cup for metal on metal articulations. Transactions of the Orthopaedic Research Society 22: 71, 1997.
 138. Goldsmith AAJ, Dowson D, Isaac GH, Lancaster JG: A comparative joint simulator study of the wear of metal-on-metal and alternative material combinations in hip replacements. Proceedings of the Institution of Mechanical Engineers, Journal of Engineering in Medicine 214: 39-47, 2000.
 139. Hallab NJ et al: Concentration and composition-dependent effects of metal ions on human MG-63 osteoblasts J Biomed Mater Res 60:420-33, 2002

140. Huk OL et al: Induction of apoptosis and necrosis by metal ions in vitro. *J Arthroplasty* 19(8) Suppl 3:84-7, 2004
141. Jin ZM, Dowson D, Fisher J: Analysis of fluid film lubrication in artificial hip joint replacements with surfaces of high elastic modulus. *Proceedings of the Institution of Mechanical Engineers, Journal of Engineering in Medicine* 211: 247-256, 1997.
142. Jin ZM, Dowson D, Fisher J: Fluid film lubrication in natural hip joints. *Thin Films in Tribology*, Dowson D, Taylor CM, Godet M, eds, Elsevier Science Publishers: Amsterdam, 545-555, 1993.
143. Liao YS, Benya PD, Lu B, McKellop H: Stability of serum as a lubricant in wear simulator tests of prosthetic joints. *Transactions of the Fifth World Biomaterials Congress*: 871, 1996.
144. Lu Z, McKellop H, Liao P, Benya P: Potential thermal artifacts in hip joint wear simulators. *Transactions of the Society for Biomaterials* 21: 6, 1998.
145. Lu Z, McKellop H: Frictional heating of bearing materials tested in a hip joint wear simulator. *Proceedings of the Institution of Mechanical Engineers, Journal of Engineering in Medicine* 211: 101-108, 1997.
146. McKellop H, Lu B, Wiser H: The effect of specimen orientation and lubricant concentration on the wear of metal/metal hip implants in a wear simulator. *Transactions of the Society for Biomaterials* 21: 422, 1998.
147. Medley JB, Chan FW, Krygier JJ, Bobyn JD: Comparison of alloys and designs in a hip simulator study of metal-metal implants. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 148-159, 1996.
148. Medley JB, Dowling JM, Poggie RA, Krygier JJ, Bobyn JD: Simulator wear of some commercially available metal-on-metal hip implants. *Alternative Bearing Surfaces in Total Joint Replacement*, ASTM STP 1346, Jacobs JJ, Craig TL, eds, American Society for Testing and Materials, 1998.
149. Medley JB, FW Chan, JJ Krygier, JD Bobyn, A Lippincott, S Yue, M Tanzer, "Future and wear of metal-on-metal hip implants", *Proceedings of the Atomic Energy of Canada Limited (AECL) series on combating wear through tribology and condition monitoring*, Mississauga, Ontario, April, 1996.
150. Medley JB, JJ Krygier, JD Bobyn, FW Chan, M Tanzer, "Early wear results of metal-metal hip implants in a simulator apparatus", *Transactions of the 29th Annual Meeting of the Canadian Orthopaedic Research Society*, Halifax, Nova Scotia, p. , June, 1995.
151. Medley JB, JJ Krygier, JD Bobyn, FW Chan, M Tanzer, "Metal-metal bearing surfaces in the hip: early wear results from a simulator apparatus", *Transactions of the 21st Annual Meeting of the Society for Biomaterials*, San Francisco, California, p. 47, March, 1995.
152. Medley JB, Krygier JJ, Bobyn JD, Chan FW, Lippincott A, Tanzer M: Kinematics of the Matco™ hip simulator and issues related to wear testing of metal-metal implants. *Proceedings of the Institution of Mechanical Engineers, Journal of Engineering in Medicine* 211: 89-100, 1997.

153. Medley JB, Krygier JJ, Bobyn JD, Chan FW, Tanzer M: Metal-metal bearing surfaces in the hip: investigation of factors influencing wear. *Transactions of the Orthopaedic Research Society* 20: 765, 1995.
154. Park SH, McKellop H, Lu B, Chan F, Chiesa R, "Wear morphology of metal-metal implants: hip simulator tests compared with clinical retrievals", Metasul – a Metal-on-Metal Bearing, Hans Huber: Bern, Rieker C and Windler M, eds, pp. 73-81, 1999.
155. Ramamurti BS, Estok DM, Jasty M, Harris WH: Analysis of the kinematics of different hip simulators used to study wear of candidate materials for the articulation of total hip arthroplasties. *Journal of Orthopaedic Research* 16: 365-369, 1998.
156. Reinisch G et al: Retrieval study of uncemented metal-metal hip prostheses revised for early loosening. *Biomaterials* 24:1081-91, 2003.
157. Richey JA: A systems view of optimizing metal-metal bearings. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 115-127, 1996.
158. Rieker CB et al: Development and validation of a second generation metal-on-metal bearing. *J Arthroplasty* 19(8) Suppl 3:5-11, 2004
159. Schmalzried TP, Szuszczewicz ES, Northfield MR, Akizuki KH, Frankel RE, Belcher G, Amstutz HC: Quantitative assessment of walking activity after total hip or knee replacement. *Journal of Bone and Joint Surgery* 80-A, No. 1: 54-59, 1998.
160. Schmidt M, Weber H, Schon R: Cobalt chromium molybdenum metal combination for modular hip prostheses. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 35-47, 1996.
161. Schmidt MB, Farrar R: Characterization of the wear behavior of metal-on-metal hip components using a joint simulator. *Transactions of ASTM Alternative Bearing Surfaces in Total Joint Replacement Symposium*, San Diego, November 1998.
162. Schmidt MB, Lunn ME: Comparison of metal-polyethylene and metal-on-metal hip component wear using two different joint simulators. *Transactions of the Orthopaedic Research Society* 23: 421, 1998.
163. Schroeder D: Trace metal analysis of serum from metal on metal hip simulator evaluation: an alternative method to quantify wear. *Transactions of the Society for Biomaterials* 21: 212, 1998.
164. Scott RA, Schroeder DW: The effect of radial mismatch on the wear of metal on metal hip prosthesis: a hip simulator study. *Transactions of the Orthopaedic Research Society* 22: 764, 1997.
165. Seireg A, Arvikar RJ: The prediction of muscular load sharing and joint forces in the lower extremities during walking. *Journal of Biomechanics* 8: 89-102, 1975.
166. Semlitsch M: Metallic implant materials for hip joint endoprostheses designed for cemented and cementless fixation. *The Cementless Fixation of Hip Endoprostheses*, Morscher E, ed, Springer-Verlag: Berlin, 59-70, 1984.

167. Streicher RM, Schön R, Semlitsch M: Investigation of the tribological behaviour of metal-on-metal combinations for artificial hip joints. *Biomedizinische Technik* 35 [Biomed Tech (Berlin)], 1990, p. 3-7.
168. Streicher RM, Semlitsch MF, Weber H, Schon R: Metal-on-metal articulation: a new generation of wear resistant implants. *Transactions of the Society for Biomaterials* 17: 323, 1994.
169. Streicher RM: Tribology in medicine: testing and optimization of material combinations for endoprostheses. *Med Orthop Tech* 108: 2-44, 1988.
170. Swanson SAV, Freeman MAR: Laboratory studies with joint simulators. The scientific basis of joint replacement. Pitman Medical: London, pp. 61-68, 1977.
171. Unsworth A, Pearcy MJ, White EFT, White G: Frictional properties of artificial hip joints. *Journal of Engineering in Medicine* 17: 101-104, 1988.
172. Urban RM et al: Accumulation in liver and spleen of metal particles generated at nonbearing surfaces in hip arthroplasty. *J Arthroplast* 19(8) Suppl 3:94-101, 2004
173. Walker PS, Erkman MJ: Metal-on-metal lubrication in artificial human joints. *Wear* 21: 377-392, 1972.
174. Walker PS, Gold BL: The tribology (friction, lubrication and wear) of all-metal artificial hip joints. *Wear* 17: 285-299, 1971.
175. Wang A, JD Bobyn, S Yue, JB Medley, FW Chan, "Residual abrasive material from surface grinding of metal-metal hip implants: A source of third body wear?", Cobalt-Based Alloys for Biomedical Applications, ASTM STP 1365, JA Disegi, RL Dennedy, R Pilliar, Eds, American Society for Testing and Materials, pp. 125-134, 1999.
176. Wang A, S Yue, JD Bobyn, FW Chan, JB Medley, "Surface characterization of metal-on-metal hip implants tested in a hip simulator", *Wear* 225-229, 708-715, 1999.
177. Wang A, Yue S, Bobyn, JD, Chan FW, Medley JB: Surface characterisation of simulator tested metal-metal hip implants. *Orthopaedic Research Society* 24, 1999.
178. Weightman B, Simon S, Paul I, Rose R, Radin EL Lubrication mechanism of hip joint replacement prostheses. *Journal of Lubrication Technology*: 131-135, 1972.
179. Williams S et al: Comparative wear under different conditions of surface – engineered metal-on-metal bearings for total hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:112-17, 2004

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180. Benson, M.K., Goodwin, P.G., Brostoff, J.: Metal sensitivity in patients with joint replacement arthroplasties. *Br Med J* 4 (5993): 374-375, Nov 1975.
181. Black J: Biological performance of materials – fundamentals of biocompatibility 2nd Edition, Marcel Dekker: New York, 99-122, 1992.
182. Black J: Does corrosion matter? *J Bone Joint Surg* 70B, 1988, p. 517-520.

183. Black J.: Metal on metal bearings. A practical alternative to metal on polyethylene total joints? *Clin Orthop* (329 Suppl): S244-255, Aug 1996.
184. Brodner W, Bitzan P, Meisinger V, Kaider A, Gotsauner-Wolf F, Kotz R. Elevated serum cobalt with metal-on-metal articulating surfaces. *J Bone Joint Surg Br* 79(2): 316-21. 1997.
185. Brown GC, Lockshin MD, Salvati EA, Bullough PG: Sensitivity to metal as a possible cause of sterile loosening after cobalt-chromium total hip replacement arthroplasty. *J Bone Joint Surg* 59A, 1977, p. 164-168.
186. Campbell P, Clarke IC, Kossovsky N: Clinical significance of wear debris. *Hip Arthroplasty*, Amstutz HC, ed, Churchill Livingstone: New York, 981-993, 1991
187. Campbell P, McKellop H, Alim R, Mirra J, Nutt S, Dorr L, Amstutz HC: Metal-on-metal hip replacements: wear performance and cellular response to wear particles. *Cobalt-Base Alloys for Biomedical Applications*, ASTM STP 1365, J.A. Disegi, RL Kennedy, and R Pilliar, Eds., American Society for Testing and Materials, West Conshohocken, PA, 1999.
188. Campbell P et al: Positive cytokine production in failed metal-on-metal total hip replacements. *Acta Orthop Scand* 73(5):505-512, 2002
189. Catelas I, Bobyn JD, Vali H, Medley JB, Zukor DJ, Petit A, Huk OL: Characterization of metal-metal wear particles isolated from a hip joint simulator, *Transactions of the Society for Biomaterials*, 482, 2000.
190. Case CP, Langkamer VG, James C et al.: Widespread dissemination of metal debris from implants. *J Bone Joint Surg* 76B, 1994.
191. Case CP, Langkamer VG, Howell RT, Webb J, Standen G, Palmer M, Kemp A, Learmonth D. Preliminary Observations on Possible Premalignant Changes in Bone Marrow Adjacent to Worn Total Hip Arthroplasty Implants. *Clinical Orthopedics and Related Research*, 329S:269-279.
192. Davies AP et al: An unusual lymphocytic perivascular infiltration in tissues around contemporary metal-on-metal joint replacements. *J Bone Joint Surg* 87A:18-27, 2005
193. Doorn PF, Campbell PA, Amstutz HC: Metal versus polyethylene wear particles in total hip replacements. *Clinical Orthopaedics and Related Research* 329 (Supplemental): 206-216, 1996.
194. Doorn, P.F., Campbell, P.A., Worrall, J., Benya, P.D., McKellop, H.A., Amstutz, H.C.: Metal wear particle characterization from metal on metal total hip replacements: transmission electron microscopy study of periprosthetic tissues and isolated particles. *J Biomed Mater Res* 42 (1): 103-111, Oct 1998.
195. Doorn-PF; Mirra-JM; Campbell-PA; Amstutz-HC: Tissue reaction to metal on metal total hip prostheses. *Clinical-Orthopaedics-and-Related-Research*.-/329 SUPPL. S187-S205 1996.
196. Evans EM, Freeman MAR, Miller AJ, Vernon-Roberts B: Metal sensitivity as a cause of bone necrosis and loosening of the prosthesis in total joint replacement. *J Bone Joint Surg* 56B, 1974, p. 626-642.

197. Gillespie WJ, Frampton CMA, Henderson RJ: The incidence of cancer following total hip replacement. *J Bone Joint Surg* 70B: 539-542, 1988.
198. Gleizes, V., Poupon, J., Lazennec, J.Y., Chamberlin, B., Saillant, G.: Value and limits of determining serum cobalt levels in patients with metal on metal articulating prostheses. *Rev Chir Orthop Reparaotrice Appar Mot* 85 (3): 217-225, Jun 1999.
199. Goodfellow J: Malignancy and joint replacement. *J Bone Joint Surg* 74B, 1992, p. 645.
200. Hallab N et al: Metal sensitivity in patients with orthopaedic implants. *JBJS* 83-A(3):428-36, 2001
201. Hallab N et al: Immune responses correlate with serum-metal in metal-on-metal hip arthroplasty. *J Arthroplasty* 19(8) Suppl 3:88-93, 2004.
202. Heath J, Freeman M, Swanson S: Carcinogenic properties of wear particles from prostheses made in cobalt-chromium alloy. *Lancet* 1, 1971, p. 564-566.
203. Howie DW, Tissue response in relation to type of wear particles around failed hip arthroplasties. *Journal of Arthroplasty* 5: 337, 1991.
204. Howie DE et al: Biologic effects of cobalt chrome in cell and animal models. *Clin Orthop* 329S:217-32, 1996
205. Howie DW et al: The long-term effects of retrieved McKee-Farrar metal-on-metal total hip prostheses. *J Arthroplasty* 20(3):350-7, 2005.
206. Jacobs JJ, Skipor AK, Doorn PF, Campbell P, Schmalzried TP, Black J, Amstutz HC. Cobalt and chromium concentrations in patients with metal on metal total hip replacements. *Clin Orthop.* 1996 Aug;(329 Suppl):S256-263.
207. Jacobs JJ, Skipor AK, Patterson LM, Hallab NJ, Paprosky WG, Black J, Galante JO. Metal release in patients who have had a primary total hip arthroplasty. A prospective, controlled, longitudinal study. *J Bone Joint Surg Am* 80(10):1447-58. 1998.
208. Jones DA, Lucas HK, O'Driscoll M, Price CHG, Wibberley B: Cobalt toxicity after McKee hip arthroplasty. *J Bone Joint Surg* 57B, 1975, p. 289-296.
209. Langkamer VG, Case CP, Heap P, Taylor A, Collins C, Pearse M, Solomon L Systemic Distribution of Wear Debris After Hip Replacement: A Cause for Concern?. *Journal of Bone and Joint Surgery*, 74B:6:831-838, Nov. 1992.
210. Lewis CG, Sunderman FW. Metal Carcinogenesis in Total Joint Arthroplasty. *Clinical Orthopedics and Related Research*, 329S:264-268, Aug. 1996.
211. Mathiesen EB, Ahlbom A, Bermann G, Urban Lindgren J: Total hip replacement and cancer. *J Bone Joint Surg* 77B, 1995, p. 345-350.
212. Merritt K and Brown SA: Distribution of cobalt chromium wear and corrosion products and biologic reactions. *Clinical Orthopedical and Related Research*, 329S:233-242, 1996.

213. Reinisch G et al: Retrieval study of uncemented metal-metal hip prostheses revised for early loosening. *Biomaterials* 24:1081-91, 2003
214. Rooker GD, Wilkinson JD: Metal sensitivity in patients undergoing hip replacement. A prospective study. *J Bone Joint Surg* 62B, 1980, p. 502-505.
215. Saikko V, Nevalainen J, Revitzer H, Ylinen P. Metal release from total hip articulations in vitro: from CoCr/CoCr, negligible from CoCr/PE and alumina/PE. *Acta Orthop Scand*. 1998 Oct;69(5):449-54.
216. Shanbhag AS, Jacobs JJ, Black J, et al: Macrophage/particle interactions: effect of size, composition and surface area. *Journal of Biomedical Materials Research* 28: 81-90, 1994.
217. Smalzried TP: How I choose a bearing surface for my patients. *J Arthroplasty* 19(8) Suppl 3:50-3, 2004
218. Swanson SAV, Freeman MAR, Heath JC. Laboratory Tests on Total Joint Replacement Prostheses. *Journal of Bone and Joint Surgery*, 55B:4:759-773, Nov. 1973.
219. Tharani R, Dorey FJ, Schmalzried T: The risk of cancer following total hip and knee arthroplasty. Submitted for publication, JBJS 2000.
220. Visuri T: Cancer risk after metal on metal hip prosthesis. *Metasul – a Metal-on-Metal Bearing*, Hans Huber: Bern, Rieker C and Windler M, eds, pp. 149-154, 1999.
221. Visuri, T. and Koskenvuo, M. Cancer risk after McKee-Farrar total hip replacement. *Orthopedics* 14 (2): 137-142, Feb 1991.
222. Visuri-T; Pukkala-E; Paavolaisten-P; Riska-EB: Cancer risk after metal on metal and polyethylene on metal total hip arthroplasty. *CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research.-/329 SUPPL. (S280-S289)*, 1996.
223. Willert HG, Semlitsch M: Reactions of the articular capsule to wear products of artificial joint prostheses. *Journal of Biomedical Materials Research* 11: 157-164, 1977.
224. Willert HG, Semlitsch M: Tissue reactions to plastic and metallic wear products of joint endoprostheses. *Total Hip Prostheses*, Geschwend N, Debrunner HU, eds, Bern H Huber, 205-217, 1976.
225. Willert-HG; Buchhorn-GHH; Gobel-D; Koster-G; Schaffner-S; Schenk-R; Semlitsch-M: Wear behavior and histopathology of classic cemented metal on metal hip endoprostheses. *CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research.-/329 SUPPL. (S160-S186)*, 1996.
226. Willert-HG et al: Metal-on-metal bearings and hypersensitivity in patients with artificial hip joints. *J Bone Surg* 87A:28-36, 2005

Reviews

227. Amstutz HC, Campbell P, McKellop H, Schmalzreid TP, Gillespie WJ, Howie D, Jacobs J, Medley J, Merritt K. Metal on metal total hip replacement workshop consensus document. *Clin Orthop*. 1996 Aug;(329 Suppl):S297-303.

228. Amstutz HC, et al. Evolution and future of surface replacement of the hip. *J Orthop Sci.* 3(3): 169-86, 1998.
229. Amstutz-HC; Grigoris-P: Metal on metal bearings in hip arthroplasty. CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and-Related-Research.-/329 SUPPL. (S11-S34) 1996
230. Archibeck MJ et al: Alternate bearing surfaces in total joint arthroplasty. *Clin Orthop* 379:12-21, 2000
231. Campbell P et al: Biologic and tribologic considerations of alternative bearing surfaces. *Clin Orthop* 418:98-111, 2004.
232. Dumbleton JH and Manley M: Metal-on-metal total hip replacement. What does the literature say? *J Arthroplasty* 20(2):174-88, 2005
233. Heisel C et al: Bearing surface options for total hip replacement in young patients. *JBJS* 85-A(7):1366-79, 2003
234. Jacobs J J et al: Can metal levels be used to monitor metal-on-metal hip arthroplasties? *J Arthroplasty* 19 (8) Suppl 3:59-65, 2004.
235. Jazrawi LM, Kummer FJ, Di Cesare PE: Hard bearing surfaces in total hip arthroplasty. *Am J Orthop.* 27(4): 283-92. 1998.
236. Jazrawi LM, Kummer FJ, DiCesare PE. Alternative bearing surfaces for total joint arthroplasty. *J Am Acad Orthop Surg.* 6(4): 198-203. 1998.
237. MacDonald SJ et al: A consensus paper on metal ions in metal-on-metal hip arthroplasties. *J Arthroplasty* 19(8)Suppl 3:12-16, 2004
238. MacDonald SJ: Can a safe level for metal ions in patients with metal-on-metal total hip arthroplasties be determined? *J Arthroplasty* 19(8) Suppl 3:71-7, 2004
239. MacDonald SJ: Metal-on-metal total hip arthroplasty. The concerns. *Clin Orthop* 429:86-93, 2004
240. McKee GK: Developments in Total Hip Joint Replacement. Symposium on Lubrication and Wear in Living and Artificial Human Joints. London, Inst Mech Eng, 1967, p. 85-89.
241. McKee GK: Total hip replacement - past, present and future. *Biomaterials* 3: 130-135, 1982.
242. Muller ME: Lessons of 30 years of total hip arthroplasty. *Clinical Orthopaedics and Related Research* 274: 12-21, 1992.
243. Muller-ME: The benefits of metal-on-metal articulation in total hip replacements. CLIN-ORTHOP-RELAT-RES. Clinical-Orthopaedics-and Related-Research.-/311 (54-59), 1995.
244. Nevelos J: Wear of metal on metal hip replacement implants. Information in support of downclassification. Document submitted to OSMA, 2005
245. Scales JT: Arthroplasty of the hip using foreign materials: a history. *Proceedings of the Institution of Mechanical Engineers* 181 (3J): 63, 1966-67.

246. Schmalzried TP, Callaghan JJ. Wear in total hip and knee replacements J Bone Joint Surg Am. 81(1): 115-36. 1991.
247. Schmidt M, Weber H, Schon R. Cobalt chromium molybdenum metal combination for modular hip prostheses. Clin Orthop. 1996 Aug; (329 Suppl): S35-47.
248. Semlitsch M, Willert HG. Implant materials for hip endoprostheses: old proofs and new trends. Arch Orthop Trauma Surg. 114(2): 61-7. 1995.
249. Signorello LB et al: Nationwide study of cancer risk among hip replacement patients in Sweden. J Nat Cancer Inst 93(18):1405-10, 2001
250. Sims CT: A contemporary view of cobalt base alloys. Journal of Metals: 27-42, December 1996.
251. Smith RD: Total hip replacement: Metal against metal. Review and analysis of cases 1961-1972. Clin Orthop 95, 1973, p. 43-47.
252. Streicher RM: Metal-on-metal articulation in total hip arthroplasty: the case for using metal-on-metal. J Arthroplasty. 13(3): 343-5; discussion 345-6. 1998.
253. Streicher RM: The case for using metal-on-metal. Journal of Arthroplasty 13: 343-345, 1998.
254. Tharani R et al: The risk of cancer following total hip or knee arthroplasty. JBJS 83-A(5):774-80, 2001
255. Tountas AA: The historical development and clinical results on metal on metal total hip systems, Clin Orthop. (340): 283-4. 1997.
256. Weber BG, Fiechter T. [Polyethylene wear and late loosening of a total prosthesis the hip joint. New perspectives for metal/metal pairing of the capsule and head]. Orthopade. 18(5): 370-376. 1989.
257. Weber BG. [Metal-metal total prosthesis of the hip joint: back to the future]. Z Orthop Ihre Grenzgeb. 130(4): 306-9. 1992.